

It is claimed:

1. An accelerated roller apparatus on a handheld electronic device that handles urgency conditions comprising:

5           a manipulable mechanism capable of providing a manipulation-related signal, changes in the signal occurring whenever motion is imparted upon the manipulable mechanism; and

          an urgency activity detector module that generates an urgency message when the changes in the signal indicate an urgency condition,

10           said urgency activity detector module using the signal changes to determine the urgency condition based upon timing of successive manipulations of the manipulable mechanism satisfying a preselected timing threshold,

          wherein an application operable on the device processes the urgency message.

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2. The accelerated roller apparatus of claim 1 wherein the manipulable mechanism is a roller.

3. The accelerated roller apparatus of claim 2 wherein a signal is generated by  
20 every click of the roller's rotation.

4. The accelerated roller apparatus of claim 2 wherein a first and second level of urgency is detected by the urgency activity detector module, said first level of urgency being determined when the timing of successive manipulations satisfy a  
25 first preselected timing threshold, said second level of urgency being determined when the timing of successive manipulations satisfy a second preselected timing threshold.

5. The accelerated roller apparatus of claim 4 wherein the second level of  
30 urgency indicates greater urgency relative to the first level of urgency.

6. The accelerated roller apparatus of claim 5 wherein the second preselected timing threshold is representative of timing between successive manipulations being less than the timing between successive manipulations for the first preselected timing threshold.

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7. The accelerated roller apparatus of claim 2 wherein the roller is embedded within the device with a small section of the roller protruding from the device.

10 8. The accelerated roller apparatus of claim 1 wherein the manipulation of the mechanism results in signals being generated that are indicative of the direction and amount of the manipulation, said urgency activity detector module using the generated signals to determine the urgency condition.

15 9. The accelerated roller apparatus of claim 1 further comprising:  
a queue connected to the urgency activity detector module that stores the urgency messages.

20 10. The accelerated roller apparatus of claim 1 wherein the urgency message in the queue is provided to the application.

11. The accelerated roller apparatus of claim 1 wherein a mode message indicates whether the urgency activity detector module is to process urgency conditions.

25 12. The accelerated roller apparatus of claim 1 wherein the mode message is a disable message to indicate that the manipulations of the mechanism are to be provided to the application without an urgency indication.

30 13. The accelerated roller apparatus of claim 1 wherein a non-urgent message is generated from the manipulation of the mechanism when the manipulation does not indicate an urgency condition.

14. The accelerated roller apparatus of claim 1 wherein the urgency activity detector module generates a rapid rotation deceleration message when the timing of successive manipulations of the mechanism satisfies a preselected rapid deceleration timing threshold.

15. The accelerated roller apparatus of claim 1 wherein the device is a pager.

16. The accelerated roller apparatus of claim 1 wherein the device is equipped to receive both voice and non-voice data messages.

17. The accelerated roller apparatus of claim 1 wherein the urgency activity detector module detects that rotation urgency is of a preselected low degree to disable electronic rotation inertia, and upon the detection of the sufficiently low degree of rotation urgency, the amount of electronic rotation associated with the signal is set to the amount of mechanical rotation associated with the roller signal.

18. A method for roller input on a handheld electronic device comprising the steps of:

- (a) receiving roller input;
- (b) receiving an accelerated mode input which can be either active or inactive;
- (c) computing a roller state;
- (d) if the accelerated mode input is active, then accelerated mode steps are enabled in order to detect an urgency condition; and
- (e) signalling a change in the roller state to software executing on the handheld electronic device that is indicative of an urgency condition if the accelerated mode input is active, said urgency condition being determined based upon timing of successive manipulations of the roller satisfying a preselected timing threshold.

19. The method of claim 18 in which the roller input of step (a) comprises:  
a roller rotation direction which can be either positive or negative; and  
a roller rotation amount.

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20. The method of claim 19 in which the step of computing the roller state of step (c) comprises a roller position register whereby:

if the roller input rotation direction is positive, the roller position register is incremented by a constant amount proportional to the roller rotation amount; and

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if the roller input rotation direction is negative, the roller position register is decremented by a constant amount proportional to the roller rotation amount.

21. The method of claim 20 in which the accelerated mode steps in step (d) comprise:

computing an accelerated roller state;

detecting a change in roller direction;

detecting a timeout condition;

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detecting a consecutive roll condition; and

computing a value for the roller position register as a function of the accelerated roller state and detected conditions.

22. The method of claim 21 in which the accelerated roller state of step (a) comprises a direction register, a time register, and a speed register whereby:

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the value of the roller rotation direction is stored in the direction register;

the value of a real time clock is stored in the time register; and

the instantaneous differential amount of roller acceleration is stored

30 in the speed register.

23. The method of claim 22 in which the step of detecting a change in roller direction comprises a step of comparing roller rotation direction to the value stored in the direction register.

5 24. The method of claim 22 in which the step of computing an accelerated roller state comprises a step of computing a time lapsed by subtracting the value of the time register from the value of the real time clock.

10 25. The method of claim 24 in which the step of detecting a timeout condition comprises the step of comparing the time lapsed to a timeout threshold whereby if the time lapsed is greater than the timeout threshold, a timeout condition is detected.

15 26. The method of claim 24 in which the step of detecting a consecutive roll condition comprises the step of comparing the time lapsed to a consecutive threshold whereby if the time lapsed is smaller than the consecutive threshold, a consecutive roll condition is detected which is indicative of the urgency condition.